

Enriching Higher Education Curriculum to Meet the Challenges of 21st Century in Nigeria

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Abstract

The right to education means educational opportunity must be both equal and universal. Throughout its existence, member state of UNESCO has sought to expand the reach of educational services and improve their quality. Its commitment to innovation, notably through the use of technology, is equally longstanding. Educational progress in many developing countries like Nigeria faces a severe double bind. This opposing trend puts intolerable pressures on Nigerian's educational system. Traditional expansion on educational system will be impossible, so there is need for enriching the higher education curriculum to meet with the twenty-first century challenges through new resources such as skill acquisition, innovation, creativity and new methods. Impressive advance in technology over the past few years provide new hope that technological solutions, innovation and creativity intelligently applied, can allow greater access, higher quality and low cost per learner. This paper seeks to provide ways through which skill acquisition, innovation, creativity and technological tools can better contribute to educational goals. It looks at how technology can promote improvement in reach and delivery, content, learning outcomes, teaching and pertinence. It is a contribution to global reflection on how to make learning throughout life a reality through the enriching of higher education curriculum to meet these challenges.

Keywords: Higher Education, innovation, curriculum and skill Acquisition.

1. Introduction

From the global perspective, economic and social developments are increasingly driven by the advancement and application of knowledge. Education in general and higher education in particular are fundamental to the construction of a knowledge economy and society in all nations (World Bank 1999). It's obvious there is decadence in the Nigerian educational system, (FRN 2004). There is also massive poverty and unemployment, (World Development report WDR, 2007) and (Toromiro & Kolawole 2005). According to these reports, over 70% of Nigerians live in adverse poverty, there is a high rate of crime such as armed robbery; kidnapping, violence, abduction, prostitution, extortion, bribery and corruption are all indicators to explain the high level of poverty and unemployment in our country, Nigeria.

According to Ajake, Essien & Omori (2011) education especially university education is no longer attractive despite the provision on the national policy on Education. Higher education plays a vital role in any country's socio-economic development. This is so because higher education turns out skilled workforce and experts, who give instruction to unskilled and semi-skilled workers, thinks ahead of developmental activities and forecast solutions of activities. Thus, the role of higher education in Nigeria is to equip the youths with the required norms, values, knowledge, skill and ability which will prepare them for greater challenges ahead of them to make positive impact in the country's development. Since we live in a time of a very rapid and profound social transformation, a transition from a century in which communication has become paramount, from economies based upon cars, planes and trains to one dependent upon

computers and networks (Drucker 1994). Contemporary education is an indispensable factor in the solution of modern equation whether in terms of individual self actualization, socio-economic exigencies, national development and consolidation of international relations.

One of the worlds millennium concern is the reduction of poverty and acceleration in economic growth and development. This entails attainment of full employment and high standard of living for all. Knowledge can be created, absorbed and applied only by the educated mind through higher education. This can be achieved through discovery, shaping, achieving, transmitting and applying knowledge. Thus the higher education serves the society in myriads of ways: educating the young, preserving our cultural heritage, providing the basic research that is essential in our security and well being, challenging our society and stimulating social change.

Higher education has given ample proof of its viability over the centuries and of its ability to change and to induce change and progress in society. Owing to the scope and pace of change, society has become increasingly knowledge-based so that higher learning and research now act as essential components of cultural, socio-economic and environmentally sustainable development of individuals, communities and nations. Higher education itself is confronted therefore with formidable challenges and must proceed to the most radical change and renewal it has ever been required to undertake, so that our society, which is currently undergoing a profound crisis of values, can transcend mere economic considerations and incorporate deeper dimensions of morality and spirituality. (World Conference on Higher Education 2009).

Unfortunately, due to poor planning and monitoring, the national development goals have not been achieved due to mismatch between the teaching in universities and the needs of the country. Today's Nigerian higher education is caught in a paradigm "paralysis", Nigerian society is disenchanted about the program of studies: curriculum content, mode of delivery since many of our graduates are armed with doubtful credentials. The irony of the ugly situation is that human resources, fake and genuine abound; the Nigerian soil is richly fertile, the climate is suitable for all races both for habitation as well as settlement and cultivation; mineral resources abound and are not appropriately explored. Yet higher educational institutions such as universities, colleges of education and polytechnics turns out graduates many of whom are either not employed for lack of employment opportunity or not employable due to exposure to "wrong" curriculum content or unsuitable mode of content delivery or both.

The question is what fundamental changes are we making in our educational system to handle the doubling of knowledge to meet the challenges in this 21st century? Is our curriculum content and method of delivery changing at the rate it is supposed to change? The strong pull of the forces of rapid changes, the predominance of ICT, and pervasive socio-economic uncertainty of twenty-first century would pose serious survival challenges for higher education. Hence to remain afloat (competitive) in the world in which "competitive advantage": has replaced "comparative advantage". Higher Education would have to enrich their curriculum to enable them tackle the 21st century challenges. This can be achieved through innovation in content and delivery method, integration of practical skill acquisition (vocationalization) and practical application of Information and Communication Technology (ICT) in all facets of teaching and learning.

This paper seeks to achieve the following issues:

- A brief overview of Nigeria higher Education system.
- Challenges of Higher Education in Nigeria.
- Need for innovation in content and delivery method in Nigeria higher Education curriculum.
- Need for integration of practical skill acquisition in Nigerian higher education curriculum.
- Need for integration of ICT in all facet of higher Education Curriculum.
- Conclusion.

2. A Brief Overview of Nigerian Higher Education Sysytem

A keen review of the Nigerian education system viz-a-viz its educational policies shows that with effect from 1960, emphasis was on the production of high level manpower to fill vacant position that would be created to at the exit of the expatriates after independence in report of 1960 (FBN,1960). The implementation of the Ashby commission was a failure due to its inability to meet its objectives (Akangbou 1985, Babalola 2003 and Fubunmi 2004).The 1981 NPE paid adequate attention to self-employment through the introduction of 6-3-3-4 system of education and the introduction and expansion of vocational and technical education (NPE 2004). In this regard was the setting up of the National Board for Technical Education (NBTE). However, section 5 of the NPE (2004) dealt with university and higher education policy and was emphatic on science and technology but silent on self-employment after university education. This can be used to explain the low productivity when compared to economies such as South-Africa, Korea, Japan and USA as can be seen in table 1.

Table 1: Development indicators in Nigeria and selected countries (2002-2007).

Indicators	Nigeria	South Africa	Korea	Japan	USA	Nigeria	South Africa	Korea	Japan	USA
GDP/Capita	411	2980	7660	31490	24740	800	4950	21850	31410	41950
Energy consumption/GDP	141	2399	7918	-	-	-	-	-	-	-
Gross Enrollment	76	-	102	102	104	80	99	100	101	100
Infant Mortality	191	69	12	6	10	194	68	9	4	7
Life Expectancy	51	63	71	79	76	47	61	74	85	80
Female Advantage	3.2	6	7.5	6.1	6.8	84	101	100	100	102

Source: Adopted from Ayodele and Campbell (2008) and extracts from World Development Report (2007 & 2008).

3. Direction of Transformation from Ivory Towers to Social Laboratories

According to Obanya, (2012), radical moves are being made in different parts of the world the university's ivory tower' and there is now so much talk of 'socially focus and civic engagement and developmental universities', characterized as: those whose mission is to generate knowledge that supports problem-solving 'in, with and for' the social context in which the university finds itself and that contributes to human and sustainable development.

The twenty-first century evolutionary imperatives of higher education call for transformation in the directions indicated in table 2.

Table 2: Direction of Transformation from Ivory Towers to Social Laboratories (source Obanya 2012).

Ivory Tower Orientation	Desired Social Laboratory Orientation
• Disconnect from practical concerns of everyday life	• Embedded in the practical concerns of everyday life.
• Esoteric and over-specialized focus.	• Easy to understand procedures, accessible to the average person.
• Useless (not easy to use) research.	• Useable research, applicable to genuine societal challenges.
• Academic elitism.	• Participatory academic processes.
• Outright condensation.	• Ready acceptance of other knowledge practitioners.
• No lingua franca with laymen.	• Closer link and mutual intelligibility of 'academic' and 'practical' language.
• Living in intellectual isolation.	• Opening up the wider society. • Working in concert with extra academic' actors.

The new direction of higher institutions leads us to a proper characterization of social laboratory that higher educational institution should become, if they are to fit into the requirements of the 21st century. Society-its structures and features, its needs and aspirations, its natural, social and intellectual resources, its belief systems and organisational structures, its processes for meeting its needs, keeping life going, effecting and managing change-must become the determiner and the determinant of the force of attention of higher education.

This implies opening the intellectual tower gates to extra academic actors, interacting systematically with these actors for mutual enriching in the course of knowledge management for the continuing development of society and continuous growth of knowledge.

4. Challenges of Higher Education in Nigeria

So many countries in the World have caught the fire of global mindedness especially in the European and Asian World. Yet the potential of Higher education system in developing countries like Nigeria to fulfil this responsibility is frequently thwarted by long standing problems of poor funding, poor curriculum content efficiency, equity, quality and number seeking admission, poor infrastructural facilities, poor leadership and governance, corruption, improper recruitment of staff and disconnection from the outside world (web knowledge)

1. Funding: The fund allocations are often grossly inadequate to maintain and expand services at acceptable standards. Higher education and some other sectors have suffered from inadequate funding in Nigeria over the last two and half decades. The higher education subsector have suffered continuous decline in funding. Under funding of education, more so at higher education sub-sector has become recurring phenomenon as almost everybody seems to agree that funds allocation in the sector cannot meet the sector and sub-sector needs in view of monumental decadence in the education sector (Onuka 2008, Ezekwesili 2006). Education share of the budget dropped in 1991 and 1992, remained stable in the range of 12 to 14.5 % of the total

federation budget for a number of years but dropped to 10.5% of the total budget in 2004. Inadequate funding has placed challenges and staff recruitment and development as well as facility improvement and expansion. However, if the formula for funding of universities suggested as by Obanya (2005, Obanyan, 2006) is adopted, (that is using student teacher ratio, directing teaching units, teaching support unit, research, public service, library, teaching and research equipment e.t.c.) the challenges of higher education can be averted. The data in tables 2 and 3 below indicate the budgetary allocation by the federal government to education between 1990 and 2006.

Table 3: Federal Government budget to education in Nigeria (1990-2002) Million Naira.

Year	Federal Govt. Annual Budget	Total Allocation to Education	Education Allocation As %
1991	38.70	1.80	4.62%
1992	52.10	2.40	4.60%
1993	111.60	8.00	7.20%
1994	69.20	10.00	14.86%
1995	111.50	12.80	11.50%
1996	121.20	15.40	10.81%
1997	188.10	16.80	11.53%
1998	246.30	23.70	9.61%
1999	249.00	27.80	11.13%
2000	N.A	N.A	8.36%
2001	894.20	62.60	7.00%
2002	N.A	69.03	5.90%
2003	746.50	13.50	1.76%

Source: Education Sector report (2003). Effective funding and Quality Assurance in Nigerian Education System.

Tables 3 above shows the characteristic pattern of government's budgetary allocation to education has not being consistent. As far as Nigerian government is concerned education funding was not considered as a matter of policy target in the overall budgeting. Hence, Hinchliffe (2002) indicated that the budgetary process for education in Nigeria lacks incentive for rational allocation. This implies that despite the overpopulation and increased demand for higher education, Nigerian government allocation to funds education is still very low as compared to that of other developing countries of the world.

2. Poor Curriculum content: The uncertainty that has become characteristic of the 21st century knowledge-intensive economy has posed serious challenges for higher education institution and for the classical curriculum that they have considered sacred over the ages. Academic curriculum is a strong resource to the institutions of higher learning. The content of the curriculum and its method of implementation will determine the survival of the university. Unfortunately, there is inadequacy in higher education curriculum and no regularity of review. Higher education curriculums are not broad based. Courses are largely of an academic nature as opposed to the developmental process, skill and career development.
3. Poor Infrastructural facilities: Ezewu (1986) showed that many institutions do not have the physical facilities and those which have do not have current and relevant ones so that practical lessons are taught on theoretical while equipment and materials are inadequate and sometimes borrowed for external examination. Adeogun and Osifila (2008) in study of adequacy of educational resources in public in colleges of education in Lagos state found that physical and material resources in public higher institutions observed were inadequate and poorly equipped. Many of the school buildings were dilapidated. Most institution were poorly equipped, such that laboratory equipment, instructional materials, utilities like water and light are most of the time are not available and in some areas where some of these can be found, there are grossly inadequate.
4. Quality and number seeking admission: One of the challenges of Nigerian Higher education is poor quality of students seeking admission placement in institution of higher learning.
5. Poor in-service programmes for continuing self growth of staff: there is a poor in-service programme for continuous self growth. However, where this provision is available, it is usually very irregular
6. Access to new technologies is non-existent and even when there, as best grossly inadequate

5. Implication of the Prevailing Trends for Higher Education Curriculum

The most disturbing manifestation of the challenges is the increasing un-employability of graduates of higher education. Everywhere in the world has been questioning the preparedness of universities and other higher institutions to fit into knowledge driven economic productive functions. The business world is now prescribing generic employability skills (representing what today's employers are looking out for) that should guide the development of higher education curricular as seen in the following example from Australia.

1. Communication that contributes to productive harmonious relations among employees and customers.
2. Team work that contributes to productive working relationships and outcomes.
3. Problem-solving that contributes to productive outcomes.
4. Initiative and enterprise that contributes to innovative outcomes.
5. Planning and organizing that contributes to short and long term strategic planning.
6. Self management that contributes to employee's satisfaction and growth.
7. Learning that contributes to continuous self-improvement and expansion in company's operation and outcomes.
8. Technology that contributes to effective execution of task.
9. Personal attributes-loyalty, honesty, integrity, adaptability. (Australian chamber of commerce, 2002).

6. Need for Innovation in Content and Delivery Method in Nigerian Higher Education

Quality is a multi-faceted issue which encompasses how learning is organized and managed (including delivery methods); what the curriculum content of learning is; what level of learning is achieved; what it leads to in terms of outcome and what goes on in the learning environment. Oyekan (2006), defines curriculum as the totality of planned learning experiences which the learner will acquire under the guidance of an approved educative agencies (such as home, school) in order to realize his/her needs, interest and aspiration for the benefit of growth of society. It implies that curriculum is the hardcore of education that provides the content and means of relevant knowledge, skill, and attitude for sustainable human development.

According to Saint, Hertnet & Stressner (2003) higher education teaching and learning has two dimensions: curricula and pedagogy that is content and method. In today's globally competitive knowledge economy, updating of curricula needs to be an almost permanent undertaking. Clark (2001) suggests that university departments will need to change their curricula every two or three years in order to ensure that the content of their teaching reflects the rapidly advancing frontiers of scientific and information knowledge. From the standpoint of pedagogy, expanded access and higher participation rates mean that student populations will become increasingly diverse in terms of their academic preparation, means, capacities, motivation and interests. At a global level, these changes are fuelling a shift in pedagogical emphasis from staff teaching to student learning (El-khawas 2001; Salmi 2001). In Nigeria, there are evidences that suggest the need for greater attention to innovation in both curricula and pedagogy. First, student success seems limited. Dropout rates appear to be high. Although institutional statistics are notoriously unreliable and universities do not monitor their dropout rates, the NUC attempted in 2002 to calculate dropout rates within the federal university system. Its preliminary findings suggested that dropout rates may be as high as 50% at six universities.

A study of the labour market for graduates found that employers believe "university graduates are poorly trained and unproductive on the job and shortcomings are particularly severe in oral and written communication, and in applied technical skills, Dabalén, Oni and Adekola (2000)

Such findings suggest the need for adaptive university responses visa-vis the labour market for public and private employers to look in curriculum content of universities. The establishment of more effective labour market information systems linked to career counselling in universities, and greater private sector involvement in curriculum consultations, faculty attachments, student placements, and research funding, Boateng (2002). This calls for integration of new innovation in content and delivery method in higher education curriculum.

Thus encyclopaedic knowledge (stuffing the curriculum with as many facts and figures as possible) is no longer value, as there has been a paradigm shift from "how much you know" to "how well you have learnt to learn". In addition, broad general knowledge has taken the place of narrow and early specialization. This is because the knowledge intensive work place operates in teams of knowledge-sharing colleagues and the broader the knowledge base team members, the easier the flow of communication.

The demand for broad general knowledge and the emphasis on how well one has learnt to learn as opposed to

how much one knows-has resulted in a pyramidal structure for higher education structure as shown in figure one..

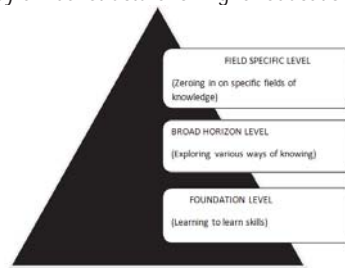


Fig 1: A higher Education Curriculum Pyramid (source Obanya 2012).

The pyramid is concerned with steps towards preparing students for a knowledge dominated world propelled by knowledge-intensive systems and processes. As shown in fig1, the base of the pyramid is the level at which the emphasis is on learning how to learn. This includes remedial work in tool subjects like language, mathematics, basic science and ICT, as well as in self-directed and team learning and activities. It is only when a solid foundation for learning skills have been laid that students would go on to explore life issue and everyday concern from a variety of perspectives in the course of which they broaden their intellectual horizons. This phase prepares the ground for field specific knowledge, focusing on anyone of the humanities, the sciences and the applied disciplines.

7. Need for Skill Acquisition Integration in Higher Education Curriculum

In the changing global scenario, employment possibility of graduates and post graduate of general subjects are becoming increasingly limited, the education imparted at degree level is not oriented to the markets needs neither is it skill based, Mujundar (2012).Sokan(2007), lament that most employers of labour subject university graduates to retooling and skill programmes after pre-qualifying them. Many students have graduated from higher education confused, dejected and rejected reading the course they read, since such courses they read are not strictly professional, they find it difficult to fit into the job market, hence there is need for skill acquisition integration in higher education curriculum. Entrepreneurship education should be a burning issue in Nigeria in the face of about 50.13 million labour force of which about 6.4 million are unemployed with approximately 4.7% unemployment rate (ILO, 2006). Besides about 66 % of Nigerian citizens educated youth live below the international poverty level of one dollar (\$1) a day or three hundred dollar (\$300) a year as compared with Libya with 12,000 dollars a year, Malaysia 8,000 dollars per capital annually(Dubalen, Olarewole and Adegoke 2000). Ajake, Essien and Omori (2011) in their review of university of Calabar curriculum from 2005-2010 sessions revealed that university of Calabar emphasis was on paper and not in practice. The study also showed very poor attitude towards entrepreneurship education on the part of the students because there was no centre for practical, no skill manpower and the awareness low. Hence, massive unemployment that has besieged Nigerian Young graduates has necessitated the need for the Nigerian higher education to make entrepreneurship as the key to survival in present economy. (Ajake et. al. 2011; Oda 2003; Adedeyin&Akerele 2006; and Ojo 2006).

As Zemsky (1995) and others have pointed out, higher education's core values will be at severe risk if a larger share of the market for undergraduate education is secured by non-traditional providers. Proponents of the residential university experience will have to develop credible and persuasive arguments for the value of the programs they offer. The focus of the curriculum and other institutional priorities will necessarily shift from the simple transmission of information to the role of the undergraduate experience in developing capacities that are essential to success in the global knowledge-based economy. These capacities, which have been referred to as "executive virtues" (Macedo, 1990), include, among others: imagination, historical perspective, initiative, independence, resolve, perseverance, diligence, and patience

We know that one of the most important functions of education is to mould the soul as well as to inform the intellect. I worry that, in focusing on the practical aspects of enabling our students to live productive lives in a knowledge-based economy, we risk paying too little attention to the challenge of enabling our students to live meaningful lives in the world of the future. There is no challenge more daunting or of greater urgency than providing our students with the ability to contend with the moral ambiguities of a rapidly changing chaotic world. In a world of certificate-based education, we risk losing what may be of greatest value in traditional education. It is not just the quality of the lives of students whose education could be short-changed, but the ability of a democratic populous to make informed decisions as regards to all round development.

8. A New Way of Looking at Skills and Skill Acquisition

In a world of work that promotes the knowledge worker, with a set of employability skills that values personal qualities much more than qualification, skills are no longer seen as simply handling hammer and fixing nuts and bolts. There is now greater emphasis on a tripartite sets of skills (see table 4) that defines the knowledge person and consequently an appropriate curriculum guide for persons who can fit neatly into the demand of Knowledge Economy.

Table 4: A tripartite skill set guiding Higher Education Curriculum

Hard Skills	Soft Skills	Go-Getting Skills
Cognitive intelligence Self-Expression Skills (oral, written, etc)	Emotional intelligence Character formation skill (for strengthening the total person)	Imaginative intelligence Creative thinking skills (thinking out of box)
Logical Reasoning Skills (for analysis and problem solving)	Intra personal skills. (For the individual to understand his/her personal strengths and weaknesses as well possibilities/potentialities)	Ideational fluency skills (proclivity in generating novel ideas)
Computational skills For mathematical reasoning	Interpersonal skills for understanding and "teaming" with others)	Opportunity grabbing skills (perceptivity in making the best of opportunities)
Design/Manipulative Skills (for purely technical reasoning and action) Conceptual Skills (for generating ideas and translating them into 'action maps')	Lifelong learning skills (knowledge-seeking skills) Perseverance Skills (for seeing ideas and projects through to fruition)	Experiential learning skills (making the best use of the lessons of experience; ever working on new ideas) Idea-to-product skills (Ease and passion for turning ideas into products and services skills, ability to apply head-hands-heart)

Table 4 illustrates the fact that higher education has to transform the total person. Thus, current practices that focus mainly on intellectual learning results in a curriculum that is not just narrow, but shallow. The soft skills according to Obanya (2012) are of supreme importance in that they make the person. The book learned person would also have to be someone whose behaviour would meet accepted ethical and social standard.

The 'go-getting skills constitute the domain of imaginative intelligence. This is the domain in which personal qualities (when fully developed) are put into creative use for continued development of the individual and for the benefit of the society at large. Thus, subjects become useful mainly when they serve as TOOLS for transforming students along the comprehensive tripartite lines as suggested in table 4. Students would then stand the chance of full development in all their intelligences: cognitive, emotional and imaginative if exposed to a curriculum that assumes such development.

9. Need for ICT Integration in All Facet of Higher Education Curriculum

One of the burning questions in the mind of educators in Nigeria is has computer and internet been used in higher education? An overview of other countries in the world shows that many higher educational institutions offering distance education courses have started to leverage the internet to improve their programmes reach and quality. The virtual university of the Monterrey institute of technology in Mexico uses a combination of print, live and recorded broadcast and the internet to deliver courses to students throughout Mexico and in several Latin American countries. Similarly the African virtual university, initiated in 1997 with funding support from the World Bank uses satellite and internet technologies to provide distant learning opportunities to individuals in various English and French speaking countries throughout Africa. At the University of Philippines Open University, course materials are predominantly print-based but online tutorials are becoming alternative to face-to-face tutorials, Dirr (2002).

Online learning involves students to log in to formal courses online perhaps the most commonly thought of application of internet in higher education. However it is by no means the only application. Web base collaboration tools such as e-mail, list servers, message board, video conferencing, connect learners to other learners, teachers, educators, scholars, researchers, scientist, artist, industry leaders, and politicians, in short any other individual with access to internet who can enrich the learning process.

There is therefore need to organize use of web resources and collaboration tools for effective curriculum. This refers to tele-collaboration. Hence Harris (2002) defines tele-collaboration as the educational endeavour that involves people in different locations using internet tools and resources to work together. Much educational tele-collaboration is curriculum based, teacher-designed and teacher-coordinated, Harris (2002). Thus the best tele-collaboration projects are

those that are fully integrated into the curriculum and not just extra-curricular activities on the internet, (facebook, twitter, and 2go e.t.c), those in which technology use enables activities that would not have been possible without it, and those that empower students to become active, collaborative, creative, and integrative and evaluate learners.

10. Issues in the Use of ICT in Education

Effectiveness, cost, equity and sustainability are four broad intertwined issues which must be addressed when considering the overall impact of the integration of ICTs in higher education curriculum, Harris (2002).

Does ICT enhanced learning really works? The educational effectiveness of ICTs depends on how they are used and for what purpose. Like any other educational tool or mode of educational delivery, ICTs do not work for everyone, everywhere in the same way. In Higher education and training, there are evidences that educational opportunities are being opened to individuals and groups who have been constrained from attending traditional universities. There have also been many studies that seem to support the claim that the use of ICT enhance and amplifies existing curricular and measurement through standardized testing. Specifically research shows that the use of computers as tutors, for all drill and practice and for instructional delivery, combined with traditional instruction results to increase learning in the traditional curriculum and basic skills area as well as higher test scores in some subjects. Students also learn more quickly, demonstrate greater retention and are better motivated to learn when they work with computers, Fouts (2002).

Research likewise suggest that the use of ICT (computer, internet and other related technologies) given adequate teacher training and support, can indeed facilitate the transformation of the learning environment into a learner centred one.

11. Key Challenges in Integrating ICTs in Higher Eeducation

Attempts to enhance and reform higher education curriculum through ICTs require clear and specific objectives, guidelines and time-bound targets, the mobilization of required resources, and the political commitment at all levels to see the initiative through. Some essential elements of planning for ICT are listed below, Harris (2002)

1. A rigorous analysis of the present state of the educational system. ICT-based interventions must take into account current institutional practices and arrangements. Specifically, drivers and barriers to ICT use need to be identified, including those related to curriculum and pedagogy, infrastructure, capacity-building, language and content, and financing.
2. The specification of educational goals at different education and training levels as well as the different modalities of use of ICTs that can best be employed in pursuit of these goals. This requires of the policymaker an understanding of the potentials of different ICTs when applied in different contexts for different purposes, and an awareness of priority education needs and financial and human resource capacity and constraints within the country or locality, as well as best practices around the world and how these practices can be adapted for specific country requirements.
3. The identification of stakeholders and the harmonizing of efforts across different interest groups.
4. The piloting of the chosen ICT-based model. Even the best designed models or those that have already been proven to work in other contexts need to be tested on a small scale. Such pilots are essential to identify, and correct, potential glitches (minor hitch or technical problem) in instructional design, implement ability, effectiveness, and the like.
5. The specification of existing sources of financing and the development of strategies for generating financial resources to support ICT use over a long term.

12. Infrastructure-Related Challenges in ICT Enhanced Higher Education Curriculum

A country's educational technology infrastructure sits on top of the national telecommunications and information infrastructure. Before any ICT-based programme is launched, policymakers and planners must carefully consider the following:

- In the first place, are appropriate rooms or buildings available to house the technology? In countries where there are many old school buildings, extensive retrofitting to ensure proper electrical wiring, heating/cooling and ventilation, and safety and security would be needed.
- Another basic requirement is the availability of electricity and telephony. In developing countries large areas

are still without a reliable supply of electricity. Experience in some countries in Africa point to wireless technologies (such as VSAT or Very Small Aperture Terminal) as possible levers for leapfrogging, Hawkins (2002). Although this is currently an extremely costly approach, other developing countries with very poor telecommunications infrastructure should study this option.

- Policymakers should also look at the ubiquity (access) of different types of ICT in the country in general, and in the educational system (at all levels) in particular. For instance, a basic requirement for computer-based or online learning is access to computers in schools, communities, and households, as well as affordable Internet service.

In general, ICT integration in higher education should follow use in society, not lead it. Education programs that use cutting-edge technologies rarely achieve long term success.

13. Implication for Growth and Development

One aspect of development programs that is often neglected is sustainability. The long history of development aid has shown that too many projects and programs start with a bang but all too soon fade out with a whimper, to be quickly forgotten. This is true for many restructuring programmes of higher education curriculum. According to Cisler (2000), the sustainability of restructuring higher education curriculum to reflect ICT integration has four components: social, political, technological, and economic.

Economic sustainability refers to the ability of a school and community to finance an ICT-enabled programme over the long term. Cost-effectiveness is key, as technology investments typically run high and in many cases divert funds from other equally pressing needs. Planners should look to the total cost of ownership and build lucrative partnerships with the community to be able to defray (assist in part or all payment) of all expenses over the long term. The need to develop multiple channels of financing through community participation ties economic sustainability closely to social and political sustainability.

Social sustainability is a function of community involvement. The school does not exist in a vacuum, and for an ICT-enabled project to succeed the buy-in of parents, political leaders, business leaders and other stakeholders is essential. Innovation can happen only when all those who will be affected by it, whether directly or indirectly, know exactly why such an innovation is being introduced, what the implications are on their lives, and what part they can play in ensuring its success. ICT-enabled programs must ultimately serve the needs of the community. Thus community-wide consultation and mobilization are processes critical to sustainability. In short, a sense of ownership for the project must be developed among all stakeholders for sustainability to be achieved.

Political sustainability refers to issues of policy and leadership. One of the biggest threats to ICT-enabled projects is resistance to change. If, for instance teachers refuse to use ICTs in their classrooms, then use of ICTs can hardly take off, much less be sustained over the long term. Because of the innovative nature of ICT-enabled projects, leaders must have a keen understanding of the innovation process, identify the corresponding requirements for successful adoption, and harmonize plans and actions accordingly.

Technological sustainability involves choosing technology that will be effective over the long term. In a rapidly changing technology environment, this becomes a particularly tricky (requiring caution and skill) issue as planners must contend with the threat of technological obsolescence (wear out). At the same time, there is the tendency to acquire only the latest technologies (which is understandable in part because these are the models which vendors are likely to push aggressively) generally, however, planners should go with tried and tested systems; stability issues plague many of the latest technologies. Again, the rule of thumb is to let the learning objectives drive the technology choice and not vice versa. The latest technologies may not be the most appropriate tools for achieving the desired educational goals. When making technology decisions, planners should also factor in not just costs but also the availability of spare parts and technical support.

14. Conclusion

Restructuring and integration of higher education curriculum through delivery method, skill acquisition integration and ICT integration is a vital tool and an engine that drive the social and economic development of a country through their activities for job creation and growth inducement.

To achieve these, higher education should be an enterprise that is valued by stake holders and the pillar of this enterprise is operational curriculum which is the hardcore of education. Thus there is a need for proper restructuring and

review of higher education curriculum as advocated at least once in two years to ensure sustainability in this 21st century. Higher education curriculum must be broad based. Deliberate efforts must be made to supervise the proper funding of higher education. Constant review and upgrading of policies which affect this sector must be regularly carried out and properly implemented. There is need to provide proper infrastructural facilities, materials and equipments as fine-tuned by curriculum experts for better appreciation. Workshops and seminars should be organized to sensitize people about the need for skill acquisition, innovation and ICT integration into higher education.

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